Rubiacearum Americanarum Magna Hama Pars VII. New Species of *Palicourea* (Psychotrieae) from Central America and Western South America

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ABSTRACT. Six new species of *Palicourea* Aublet are described and illustrated: *P. calophlebioides* from Costa Rica differs from *P. calophlebia* Standley of the Andes in part by its purple inflorescences; *P. ianthina* from western Panama differs from *P. chiriquina* Standley of the same region in part by its purple inflorescences and longer calyx limbs; *P. premontana* from Ecuador differs from *P. semirasa* Standley of Venezuela and Bolivia in part by its glabrous corollas; *P. quinquepyrena* from northern Peru is closely related to *P. ulloana* C. M. Taylor of Ecuador but differs from that species in part by its larger, subsessile leaves; *P. roseofaucis* from western Panama differs from *P. sulphurea* (Ruiz & Pavón) DC. of the Andes in part by its white to pink corollas; and *P. stellata* from east-central Colombia, with yellow flowers, is unusual in its well-developed fleshy appendages on the corolla lobes.

Key words: Neotropics, *Palicourea*, Psychotrieae, Rubiaceae.

As circumscribed by Taylor (1997), *Palicourea* (Psychotrieae) is distinguished within the Rubiaceae by its persistent stipules that are interpetiolar to usually united around the stems into a continuous sheath and usually bilobed in their interpetiolar portions; generally brightly colored inflorescences—blue, purple, red, orange, or yellow—with the flowers usually pedicellate; corollas that are usually similarly brightly colored, five-lobed, and with well-developed tubes that are somewhat swollen at the base and glabrous internally except for a dense ring of pubescence situated just above this basal swelling; and drupaceous fruits with usually two pyrenes. This neotropical genus includes about 200 species of shrubs and small trees found from sea level to montane forests. The species are typically distylous and generally pollinated by hummingbirds.

Palicourea calophlebioides C. M. Taylor, sp. nov. TYPE: Costa Rica. Limón: Cantón de Talamanca, Parque Nacional Cordillera de Talamanca, Río Lori, 300 m aguas arriba unión Quebrada Kuisa, entre Ujarrás y San José Cabécar, 9°21′35″N, 83°13′45″W, 1800 m, 23 Mar. 1993, *G. Herrera 5994* (holotype, CR-5952; isotype, MO-4999475). Figure 1A, B.

Haec species a *Palicourea calophlebia* (ex Aequatoria et Colombia occidentali) foliorum ampliorum petiolis plerumque longioribus, stipulis brevioribus atque inflorescentia corollisque purpureis lilacinisve distinguitur.

Shrubs flowering at 2.5 m tall, to 3 m tall; stems quadrate and often becoming channeled, tomentellous to glabrescent. *Leaves* opposite; blades broadly elliptic to elliptic-obovate, 25–26 × 14–16 cm, at apex rather abruptly acuminate with tips 5–12 mm long, at base acute to obtuse, drying papyraceous, adaxially glabrous, abaxially pilosulous; secondary veins 26 to 29 pairs, usually looping to interconnect at least in distal 1/2 of blade, without or with 1(to 3) very weak intersecondary vein(s) present between pairs of secondary veins, adaxially costa and secondary veins prominulous and remaining venation plane, abaxially costa prominent, secondary veins prominulous, and reticulated higher-order venation plane to thickened; margins thinly to distinctly cartilaginous, entire; *petioles* 2.5–3.5 cm long, tomentellous to velutinous; *stipules* pilosulous to tomentellous, persistent at least with leaves, united around stem into a continuous truncate sheath 5–8 mm long, lobes 2 on each side, narrowly triangular to deltate, 4–6 mm long, acute, entire. *Inflorescences* terminal, erect; peduncles 2.5–10.5 cm long; panicles narrowly pyramidal, 10–24 × 3.5–6.5 cm, with 20+ pairs of developed secondary axes, with flowers pedicellate in cymules of 3 to 7; bracts entire, those subtending secondary axes narrowly triangular to lanceolate, 6–20 × 4–7 mm, acute, those subtending pedicels lanceolate to ligulate, 4–7 × 1–2 mm, acute to obtuse; pedicels 1–6 mm long; peduncle, axes, bracts, and pedicels

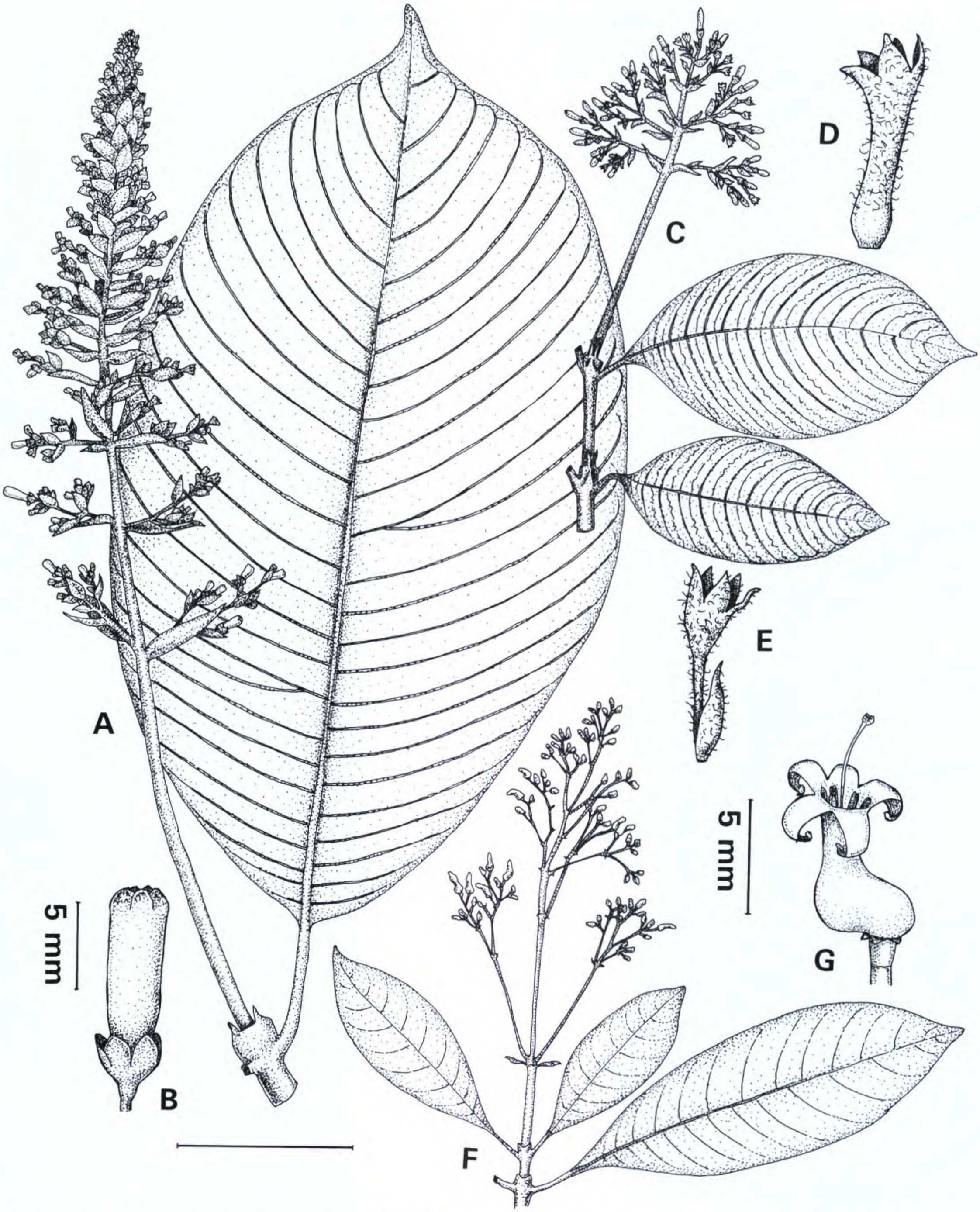

Figure 1. A, B, *Palicourea calophlebioides* C. M. Taylor. —A. Flowering branch. —B. Flower bud. C–E, *Palicourea ianthina* C. M. Taylor. —C. Flowering branch. —D. Corolla. —E. Calyx, pedicel, and floral bract. F, G, *Palicourea roseofaucis* C. M. Taylor. —F. Flowering branch. —G. Flower at anthesis. A, C, F to 5-cm scale; B, D, E, G to 5-mm scale. A, B, based on *Herrera 5994*; C, based on *Knapp & Sytsma 2638*; D, E, based on *Croat 48509*; F, based on *McPherson 9143*; G, based on *McPherson 9086*.

lilac to purple, densely pilosulous except bracts frequently glabrous; *flowers* in bud with hypanthium turbinate, ca. 1 mm long, glabrous; calyx limb glabrous, 2.5–3 mm long, divided nearly to base, lobes ligulate to lanceolate, acute, entire; corollas tubular, purple to lilac, a little swollen at base, generally straight there and in tube, externally glabrous except hirtellous on lobes, internally glabrous except

for a pilosulous ring ca. 1 mm wide just above basal swelling, tube ca. 10 mm long, ca. 1.5 mm diam. near middle, lobes deltoid, ca. 2 mm long, acute, a little thickened adaxially; anthers and stigmas not seen. *Infructescences* not seen.

Distribution, habitat, and phenology. In wet forest at 1800 m, Costa Rica; collected with young flowers in March.

This new species is similar in overall aspect to *Palicourea calophlebia* Standley of western Colombia and Ecuador, and the specific epithet refers to this similarity. *Palicourea calophlebia* differs from *P. calophlebioides* by its leaves 14–25 × 5–13.5 cm, its petioles 1.5–2.5 cm long, its stipules with the sheaths 10–14 mm long and the lobes 10–15 mm long, its green inflorescences, and its white corollas that usually turn pale blue with age.

Paratype. COSTA RICA. **Limón:** Cantón de Talamanca, Parque Nacional Cordillera de Talamanca, 300 m antes de unión Quebrada Kuisa con Río Lori, entre Ujarrás y San José Cabécar, 9°21′35″N, 83°13′45″W, *G. Herrera 5952* (MO).

Palicourea ianthina C. M. Taylor, sp. nov. TYPE: Panama. Veraguas: trail on ridge to summit of Cerro Tute, Cordillera de Tute, 1 km past Escuela Agrícola Altos de Piedras, W of Santa Fe, 8°36′N, 81°06′W, 1250–1410 m, 15 Dec. 1981, *S. Knapp & K. Sytsma 2638* (holotype, MO-2937075). Figure 1C–E, 3E.

Haec species a *Palicourea chiriquina* inflorescentia floribusque purpureis, limbo calycino 2.0–2.2 mm longo atque corolla extus dense hirtella distinguitur.

Shrubs flowering at 1 m tall, to 1.5 m tall; stems quadrate, hirtellous to hirsute or glabrescent. *Leaves* opposite; blades elliptic to elliptic-oblong or oblanceolate, 6.5–10 × 2.5–5.2 cm, at apex rather abruptly acuminate with tips 5–8 mm long, at base cuneate to obtuse or truncate, drying subcoriaceous, adaxially glabrous except sometimes densely hirtellous along costa, abaxially glabrescent to hirtellous, more densely so on secondary and tertiary venation and sometimes hirsute on costa; secondary veins 10 to 15 pairs, usually extending to unite with margins, with 1(to 3) sometimes weak intersecondary vein(s) usually present between pairs of secondary veins, adaxially venation plane or costa, secondary, and tertiary venation all thickened, abaxially costa and secondary veins prominulous to prominent and higher-order venation prominulous; margins rather thickly cartilaginous, entire; *petioles* 0.4–1.5 cm long, hirtellous; *stipules* glabrous to hirtellous, persistent, united around stem into a continuous truncate sheath 4–7 mm long, lobes 2 on each side, narrowly triangular to deltoid, 3–5 mm long, acute, entire. *Inflorescences* terminal, erect to deflexed; peduncles 1.5–7 cm long; panicles pyramidal, 3–11 × 4–10.5 cm, with 5 to 10 pairs of developed secondary axes, with flowers pedicellate in cymules of 3 to 7; bracts entire to ciliolate, those subtending secondary axes narrowly triangular or narrowly ligulate, 5–12 mm long, acute to obtuse, those subtending pedicels narrowly lanceolate, 2–3 mm long, acute; pedicels 2–3 mm long; peduncle, axes, bracts, and pedicels lavender to purple, moderately to densely pilosulous or hirtellous to rather hirsute; *flowers* with hypanthium turbinate, ca. 1 mm long, densely hirtellous to glabrous; calyx limb densely hirtellous to glabrous, 2–2.2 mm long, divided nearly to base, lobes narrowly triangular to narrowly ligulate, acute to obtuse, entire; corolla tubular-funnelform, purple to lavender, a little swollen at base, generally straight there and in tube, externally densely hirtellous with multiseriate trichomes, internally glabrous except for a pilosulous ring ca. 1 mm wide at ca. 2 mm above base, tube ca. 7 mm long, ca. 1 mm diam. near middle, lobes triangular, ca. 2 mm long, acute, a little thickened adaxially; anthers ca. 2 mm long, positioned in corolla throat; stigmas not seen. *Infructescences* similar to inflorescences, apparently purple; immature *fruits* narrowly ellipsoid to narrowly obovoid, ca. 7 × 4 mm, somewhat flattened laterally, glabrous to hirtellous, color unknown; pyrenes 2, planoconvex, dorsally with 3 to 5 low rounded longitudinal ridges.

Distribution, habitat, and phenology. In wet forest at 1100–2200 m, western Panama; collected in flower in August, September, November, and December, in young fruit in February.

This new species is distinguished by its rather thickly textured leaves with the secondary veins uniting with the margins, its stipules united into a continuous truncate sheath, its purple to lavender inflorescences and flowers, its relatively well developed calyx limbs, and its corollas that are densely hirtellous externally. The specific epithet refers to the inflorescence and flower color. The flowers seen are similar to short-styled flowers of distylous *Palicourea* species in the arrangement of their anthers and stigmas. *Palicourea ianthina* is similar to *P. adusta* Standley and *P. chiriquina* Standley. *Palicourea adusta* differs from *P. ianthina* by its leaves drying papyraceous to chartaceous, its stipules with sheaths 1–3 mm long and lobes 1–3 mm long, its calyx limbs 0.5–1.5 mm long, and its corollas externally glabrous or sometimes sparsely hirtellous on the lobes, while *P. chiriquina* differs from *P.*

ianthina by its floral bracts 1–1.5 mm long, its calyx limbs 0.8–1 mm long, and its externally glabrous yellow corollas.

Paratypes. PANAMA. **Chiriquí:** Fortuna Dam area, N of reservoir, ridge along continental divide and S from Quebrada de Arena, *D'Arcy & Todzia 15937* (MO); Cerro Pate Macho, along the continental divide, on trail to Finca Serrano, NE of Boquete, ca. 5 mi. above Boquete, *Croat 48509* (MO). **Veraguas:** N of Santa Fe, summit of Cerro Arizona, *Hammel 4727* (MO, SCZ); above Santa Fe and above Alto de Piedra, on ridge-trail to top of Cerro Tute-Arizona, 8°30′N, 81°10′W, *McPherson 12077* (MO).

Palicourea premontana C. M. Taylor, sp. nov. TYPE: Ecuador. Pastaza: along road between Puyo and Diez de Agosto and Arajuno, 18 km NE of main Puyo–Macas road (beginning 3.7 km from center of Puyo at Hotel Europa), 8.2 km NE of Diez de Agosto, 1°27′S, 77°51′W, 970 m, 4 May 1984, *T. Croat 59005* (holotype, MO-3189941). Figures 2D, E, 3B.

Haec species a *Palicourea semirasa* lobulis stipularibus longioribus, inflorescentia pro ratione angustiore, corollae extus glabrae lobulis brevioribus atque fructu rotundato distinguitur.

Shrubs flowering at 2 m tall, to 6 m tall; stems terete to somewhat quadrate, glabrous. *Leaves* opposite; blades elliptic, 15–27 × 5.5–10 cm, at apex acute to usually acuminate with tips to 15 mm long, at base cuneate to obtuse, drying papyraceous, adaxially glabrous, abaxially glabrous or sometimes puberulous on costa; secondary veins 11 to 15 pairs, not or sometimes weakly looping to interconnect near margins, often with 1(to 3) weak intersecondary vein(s) present between pairs of secondary veins, adaxially costa and secondary veins prominulous and remaining venation plane, abaxially costa prominulous to prominent and secondary veins and loosely reticulated higher-order venation prominulous; margins cartilaginous; *petioles* 1.5–4 cm long, glabrous; *stipules* glabrous, persistent, united around stem in a continuous concave sheath 0.5–2 mm long, lobes 2 on each side, ligulate to ovate, 3–8 mm long, obtuse to rounded, entire to ciliolate. *Inflorescences* terminal, erect; peduncles 6–10.5 cm long; panicles narrowly pyramidal to cylindrical, 10–11 × 4.5–8 cm (excluding corollas), with 9 to 16 pairs of developed secondary axes, with flowers pedicellate in cymules of 3 to 7; bracts entire, lanceolate to triangular, acute to acuminate, those of secondary axes 0.5–2 mm long and displaced along these axes to near middle of first internode, those subtending pedicels 0.1–0.8 mm long and displaced to above base of pedicel; pedicels 1–6 mm long; peduncle, axes, branches, bracts, and pedicels puberulous, red to pink or orange; *flowers* distylous; hypanthium cylindrical to turbinate, ca. 1 mm long; calyx limb glabrous to puberulous, ca. 0.8 mm long, sinuate to shallowly lobed, lobes triangular to semicircular, obtuse to rounded, entire to ciliolate; corolla tubular-funnelform, yellow, a little swollen at base, straight there and in tube, externally glabrous, internally glabrous except for a densely pilose ring ca. 1 mm wide at 1.5–2 mm above the base, tube 10–14 mm long, 1.5–3 mm diam. near middle, lobes deltoid, 1–1.5 mm long, acute, smooth adaxially; anthers in short-styled form ca. 3.5 mm long, included and positioned in uppermost part of the corolla tube, in long-styled form 3.5–4 mm long, included and positioned ca. 1/2 of length of corolla tube above its base; stigmas 2, in short-styled form ca. 1 mm long, included and positioned ca. 1/2 of length of corolla tube above the base, in long-styled form 1–1.5 mm long and exserted. *Infructescences* similar to inflorescences, becoming red-purple; *fruits* ovoid, 5 × 4–4.5 mm, rounded laterally, glabrous, purple-black to black; *pyrenes* 2, planoconvex, dorsally with 3 to 5 low rounded longitudinal ridges.

Distribution, habitat, and phenology. In wet forest of Ecuador and southern Colombia at 600–1650 m; collected in flower in January, March–July, September, and November, in fruit in August and October.

This new species is similar to *Palicourea guianensis* Aublet, and was included in the circumscription of that species presented by Taylor (1999). *Palicourea premontana* generally occupies a higher elevational range than *P. guianensis*, and is even more similar in morphology and habitat to *P. semirasa* Standley of Venezuela, northeastern Colombia, and Bolivia. *Palicourea semirasa* differs from *P. premontana* by its stipule lobes 1.5–2 mm long, its pyramidal to broadly rounded inflorescences with the branched portion 4–10 × 5–11 cm and the bracts usually positioned at the bases of the secondary axes, its externally glabrous corollas with lobes 2–3 mm long, and its laterally flattened fruits. *Palicourea guianensis* differs from *P. premontana* by its pyramidal inflorescences 9–19 × 7–15 cm with the bracts usually positioned at the bases of the secondary axes and its externally pubescent corollas with lobes 2–5 mm long. In general both *P. premontana* and *P. semirasa* appear to be closely related to *P. guianensis*, and to replace this third species at middle elevations in the Andes. The specific epithet of this new species refers to its elevational distribution and habitat. Relatively few well-preserved flowers of this species have been

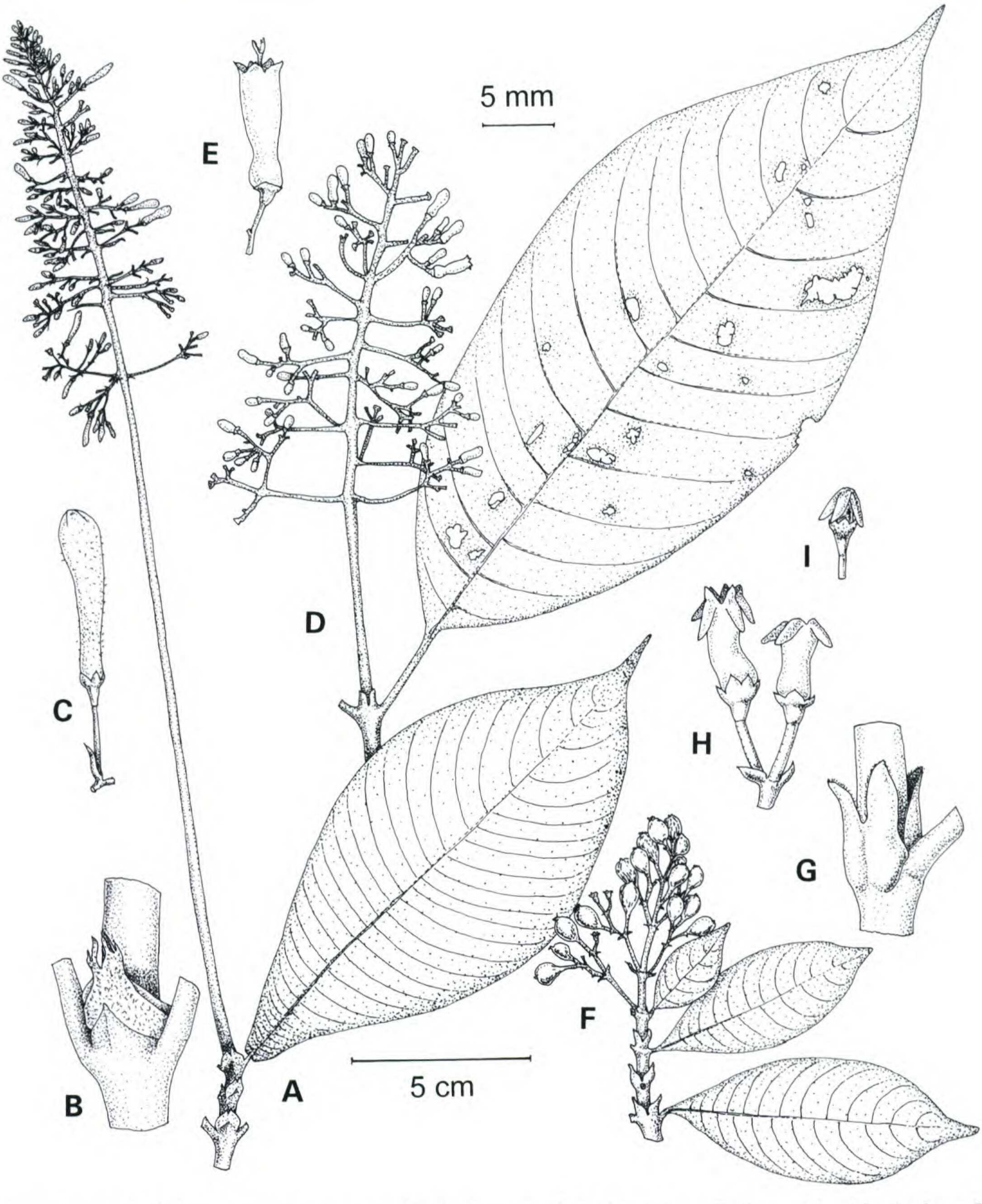

Figure 2. A–C, *Palicourea quinquepyrena* C. M. Taylor. —A. Flowering stem. —B. Stem node with stipule. —C. Flower bud, pedicel, and floral bract, of part of inflorescence axis. D, E, *Palicourea premontana* C. M. Taylor. —D. Flowering branch. —E. Flower at anthesis with pedicel. F–I, *Palicourea stellata* C. M. Taylor. —F. Fruiting branch. —G. Node with stipule. —H. Portion of inflorescence with flower bud (right) and flower at anthesis (left). —I. Young flower bud. A, D, F to 5-cm scale; B, C, E, G, H, I to 5-mm scale. A, C, based on *Vásquez et al. 25275*; B, based on *Campos 4212*; D, based on *Croat 59005*; E, based on *Gentry et al. 30918*; F, G, H, I, based on *Lozano 2264*.

seen, but these are unusual in *Palicourea* in the relatively long stigmas of the long-styled flowers and the apparently included anthers of the short-styled flowers.

Paratypes. COLOMBIA. **Caquetá:** mpio. de Florencia, vereda Las Brisas, carretera Florencia–Suaza, Km 28, 1°36′N, 75°37′W, *J. G. Ramírez et al. 5055* (JAUM, MO). ECUADOR. **Morona–Santiago:** 27 km SE of San Juan Bosco, *Gentry et al. 30918* (MO). **Napo:** cantón Tena,

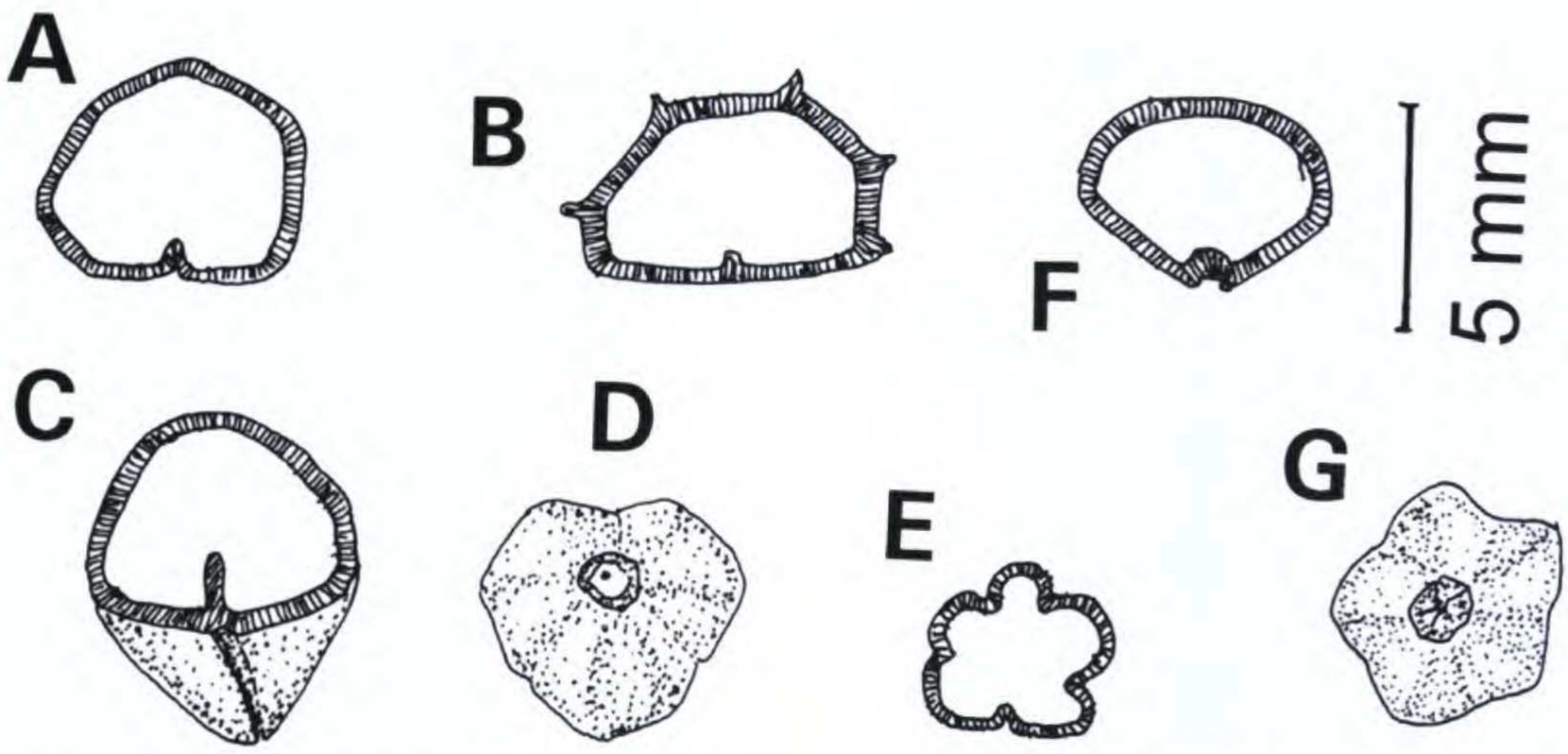

Figure 3. Pyrenes and fruits of five new species of *Palicourea*. —A. Cross section of pyrene wall of *P. stellata*; based on *Lozano 2264*. —B. Cross section of pyrene wall of *P. premontana*; based on *Gentry 30918*. —C. Cross section and partial adaxial view of pyrene wall of *P. roseofaucis*; based on *McPherson 11657*. —D. Apical view of dried fruit of *P. roseofaucis*; based on *McPherson 11657*. —E. Cross section of pyrene wall of *P. ianthina*; based on *McPherson 12077*. —F. Cross section of pyrene wall of *P. quinquepyrena*; based on *Campos 4212*. —G. Apical view of dried fruit of *P. quinquepyrena*; based on *Campos 4212*. All to same 5-mm scale.

Estación Biológica Jatun Sacha, 8 km abajo de Puerto Misahuallí, margen derecha del Río Napo, 1°04′S, 77°36′W, *A. Alvarez 77* (MO, QCNE), *Bensman 79* (MO), *Cerón 1653* (MO, QCNE), *Persson et al. 7* (MO), *Rueda et al. 1073* (MO); cantón Archidona, comunidad de Pacto Sumaco, límite del Parque Nacional Sumaco, 00°38′56″S, 77°35′49″W, *A. Alvarez et al. 1881* (MO, QCNE); cantón Orellana, Sector Huashito, 20 km al N de Coca, propiedad de PALMORIENTE, 00°20′S, 77°05′W, *Gudiño 149* (MO, QCNE); Chonta Punta at Río Napo, vicinity of Santa Rosa, *H. Lugo S. 2140* (US). **Pastaza:** Mera, along Río Allpayacu, *Harling & Andersson 16964* (MO); 2 km N of Shell-Mera, 1°29′S, 78°03′W, *Holm-Nielsen & Jeppesen 369* (MO); Pindo, ca. 6 km E of Mera, *H. Lugo S. 2388* (MO); Parayacu, ca. 10 km E of Canelos, *H. Lugo S. 4562* (MO, US); El Porvenir, ca. 5 km N of Puyopungu, *H. Lugo S. 4887* (MO).

Palicourea quinquepyrena C. M. Taylor, sp. nov. TYPE: Peru. Amazonas: Distrito Bagua, Aramango, Chorro Blanco, 5°29′30″S, 78°20′04″W, 1500–1800 m, 11 Feb. 1998, *R. Vásquez & R. Rojas 25275* (holotype, MO-5333613). Figures 2A–C, 3F, G.

Haec species a *Palicourea ulloana* foliorum ampliorum subsessilium brevipetiolatorumve venis secundariis pluribus brochidodromis distinguitur.

Shrubs flowering at 0.8 m tall, to 1 m tall, apparently little or not branched, apparently accumulating litter in leaf bases; stems terete, glabrous. *Leaves* opposite; blades elliptic to usually oblanceolate, 14.5–30.5 × 4.5–12 cm, at apex acute to usually acuminate with tips to 20 mm long, at base obtuse to truncate or rounded, drying papyraceous, adaxially glabrous, abaxially puberulous at least on veins; secondary veins 24 to 28 pairs, spreading sometimes to more than 90°, usually looping to interconnect at least weakly, with 1(to 2) weak intersecondary vein(s) usually present between pairs of secondary veins, adaxially costa and remaining venation prominulous, abaxially costa prominulous to prominent and secondary veins and reticulated higher-order venation prominulous; margins thinly cartilaginous; *petioles* 3–6 mm long, glabrous; *stipules* puberulous, persistent or sometimes fragmenting, united around stem into a continuous truncate sheath 3–4 mm long, with interpetiolar portion triangular, lobes 2 to 4 on each side, narrowly triangular, 3–7 mm long, acute, entire, closely grouped, inserted below top of sheath at intersection of two diagonal costae. *Inflorescences* terminal, apparently erect; peduncle 14–25 cm long; panicle cylindrical to narrowly pyramidal, 10–20 × 3.5–14 cm (excluding corollas), with 14 to 16 pairs of developed secondary axes, with flowers pedicellate in cymules of 3 to 7; bracts entire to ciliolate, narrowly triangular, acute, those subtending secondary axes 3–6 mm long, those subtending pedicels 1.5–3 mm long; pedicels 2–8 mm long; peduncle, axes, bracts, and pedicels densely puberulous, color not noted; *flowers* with hypanthium cylindrical to turbinate, ca. 0.8 mm long; calyx limb glabrous, 0.8–1.5 mm long, divided nearly to base, lobes elliptic to narrowly ligulate, often somewhat unequal on a single flower, acute to obtuse, entire; corolla slenderly funnelform, red, swollen and a little bent at base, straight in tube, externally papillose to puberulous, internally glabrous except for a sparsely pilosulous ring ca. 2 mm wide at ca. 1.5 mm above base, tube ca. 12 mm long, ca. 1.5 mm diam. near middle, lobes triangular, ca. 2 mm long, acute, smooth adaxially; anthers ca. 3.5 mm long, positioned ca. 2/3 of length of corolla tube above its base; stigmas

5, ca. 1 mm long, exserted. *Infructescences* similar to inflorescences except apparently deflexed to pendulous, purple; *fruits* ellipsoid to oblate, ca. 3.5 × 4.5 mm, glabrous, color unknown; pyrenes 5, triangular in horizontal section, the internal faces planar, dorsally smooth, rounded.

Distribution, habitat, and phenology. In wet forests at 1500–1800 m in northern Peru; collected in flower in February, in fruit in July.

This new species is distinguished by its subsessile to shortly petiolate leaves with relatively numerous secondary veins and obtuse to rounded bases, its stipules with the lobes tightly grouped and inserted near the middle of the interpetiolar portion of the sheath, its relatively long peduncles, its well-developed calyx lobes, and its fruits with five smooth pyrenes. The specific epithet refers to these fruits. This species shares its unusual stipule morphology and fruits with several pyrenes with *Palicourea ulloana* C. M. Taylor of Ecuador; *P. ulloana* differs from *P. quinquepyrena* by its leaves 4.5–14 × 1.4–5 cm with acute to cuneate bases and 10 to 12 pairs of secondary veins that extend to unite with the margins, its stipules with the sheaths 1–2.5 mm long and two lobes 2–3.5 mm long on each side, its peduncles 3–9 cm long, its inflorescences with the branched portion 3.5–10.5 × 2–3 cm (excluding the corollas), and its fruits with four pyrenes. The few flowers of *P. quinquepyrena* seen are similar to the long-styled form of distylous *Palicourea* species in the arrangement of their anthers and stigmas. The leaves of *P. quinquepyrena* apparently accumulate litter in their bases, similar to some other species of Rubiaceae (e.g., *Pentagonia wendlandii* Hooker f.) and other families; this has been called at times a "trash bucket" habit.

Paratypes. PERU. **Cajamarca:** prov. San Ignacio, dtto. Huarango, Nuevo Mundo-Caserío Gosén, La Colmena, 5°18′30″S, 78°43′00″W, *J. Campos et al. 4212* (MO); Nuevo Mundo, Caserío Gosén, arriba del margen izquierdo de la quebrada Las Juntas, *E. Rodríguez R. & P. Reyes M. 1748* (MO).

Palicourea roseofaucis C. M. Taylor, sp. nov. TYPE: Panama. Chiriquí: vicinity of Fortuna Dam, along trail across valley of Quebrada Hornito, 8°40′04″N, 79°50′04″W, 1150 m, 26 Feb. 1987, *G. McPherson 10579* (holotype, MO-4390379). Figures 1F, G, 3C, D.

Haec species a *Palicourea sulphurea* corolla ex alba rosea suffusa distinguitur, etiam eae areas geographicas disjunctas habitant.

Shrubs and trees flowering at 5 m tall, to 12 m tall; stems quadrate, glabrous. *Leaves* opposite; blades elliptic, 6–20 × 2–6.5 cm, at apex acute to acuminate with tips to 10 mm long, at base acute to cuneate, drying chartaceous to subcoriaceous, adaxially glabrous and shiny, abaxially glabrous except hirtellous in a line along each side of costa; secondary veins 8 to 16 pairs, usually extending to near margins or sometimes looping weakly to interconnect near margins, without or infrequently with 1 weak intersecondary vein usually present between pairs of secondary veins, adaxially costa and secondary veins prominulous and reticulated higher-order venation plane to impressed, abaxially costa prominent, secondary veins prominulous, and reticulated higher-order venation plane; margins thinly to distinctly cartilaginous, entire; *petioles* 1–2.5 cm long, glabrous; *stipules* glabrous, persistent, united around stem in a continuous sheath, interpetiolar portion 5–7 mm long, emarginate to shallowly bilobed, lobes 1–2 mm long, rounded, entire. *Inflorescences* terminal, erect, with peduncles 0.5–2.5 cm long or sessile and seemingly "tripartite"; branched portion narrowly pyramidal, 8–16 × 5–9 cm (excluding corollas), with 5 to 6 pairs of developed secondary axes, with flowers sessile to shortly pedicellate in cymules of 3 to 9; bracts entire, those subtending secondary axes narrowly triangular to lanceolate, 3–13 mm long, acute, those subtending pedicels ligulate to triangular, 1–2 mm long, acute; pedicels 0–1 mm long; peduncle, axes, bracts, and pedicels strigillose to hirtellous, apparently green; *flowers* distylous; hypanthium turbinate, ca. 1 mm long, strigillose; calyx limb glabrous to strigillose, ca. 1 mm long, divided nearly to base, lobes triangular to deltoid, acute to obtuse, entire; corolla tubular-funnelform, externally white, internally pink, markedly swollen at base, bent ca. 90° at base and then again ca. 90° just above basal swelling, externally puberulous to glabrous, internally glabrous except for a pilose ring ca. 1 mm wide just above basal swelling, tube ca. 6 mm long, ca. 2.5 mm diam. near middle, lobes triangular, ca. 3 mm long, triangular, acute, a little thickened adaxially; anthers in short-styled form 1–1.2 mm long, partially exserted, in long-styled form ca. 2 mm long, included and positioned near middle of tube; stigmas 2, in short-styled form ca. 2.5 mm long, included and positioned ca. 2/3 of length of tube above base, in long-styled form ca. 0.3 mm long and exserted. *Infructescences* similar to inflorescences, red-purple; *fruit* ellipsoid to obovoid, ca. 5 × 5.5 mm, somewhat flattened laterally, glabrous, blue; pyrenes 2 to 3, planoconvex, dorsally smooth or with 3 to 5 longitudinal angles.

Distribution and habitat. In wet forest in west-

ern Panama at 1100–1350 m; collected in flower in February and April, in fruit in June and September.

This new species is distinguished by its stipules with the interpetiolar portion emarginate or with at most short rounded lobes, its rather tough-textured leaves that are usually shiny on the adaxial surface, its corollas that are white externally, pink internally, and strongly gibbous and bent near the base, and its dorsally smooth or longitudinally angled pyrenes. The specific epithet refers to the corolla color. This new species is similar to *Palicourea sulphurea* (Ruiz & Pavón) DC. of Andean Colombia to Peru; *P. sulphurea* differs from *P. roseofaucis* by its yellow corollas, and these two species appear to be allopatric. *Palicourea tumidonodosa* Dwyer from the Panama–Colombia border is also similar to both of these species, but *P. tumidonodosa* is known only from specimens with very young inflorescences, on which several important characters are not evident, in particular the colors of the inflorescences and corollas, the mature sizes of the calyx and corolla, and the size and morphology of the pyrenes. *Palicourea tumidonodosa* may be conspecific with *P. roseofaucis* or *P. sulphurea*, or it may represent a third species, but because none of these possibilities can be excluded, *P. tumidonodosa* is here provisionally recognized as distinct.

Paratypes. PANAMA. **Bocas del Toro:** Fortuna Dam region, along continental divide W of highway pass, 8°45′N, 82°15′W, *McPherson 9688* (MO). **Chiriquí:** along road between Gualaca and the Fortuna Dam site, at 8.3 mi. NW of Los Planes de Hornito, *Antonio 4146* (MO); Fortuna Dam region, above northern edge of lake, 8°45′N, 82°15′W, *McPherson 9086* (MO); vicinity of Fortuna Dam, along trail from highway down to the reservoir, *McPherson 9143* (MO); vicinity of Fortuna Dam, along trail from highway across Rio Hornito, S of reservoir, 8°45′N, 82°15′W, *McPherson 11657* (MO).

Palicourea stellata C. M. Taylor, sp. nov. TYPE: Colombia. Santander: mpio. de Gámbita, vereda El Taladro, carretera Duitama–Charalá, 2100–1900 m, 14 Feb. 1983, *S. Díaz P. 4053* (COL-239056). Figures 2F–I, 3A.

Haec species a congeneris foliorum venatione utrinque prominula ac venis intersecundariis bene evolutis, limbo calycino bene evoluto atque corollae flavae quoque lobulo appendicem carnosam 3–4 mm longam gerente distinguitur.

Shrubs flowering at 1.5 m tall, to 5 m tall; stems terete to rather quadrate, hirtellous to glabrous. *Leaves* opposite; blades elliptic to oblanceolate, 3.5–11.5 × 1–4 cm, at apex acute to usually acuminate with tips to 10 mm long, at base acute to cuneate, drying chartaceous, adaxially glabrous or sometimes sparsely hirtellous along sides of costa, abaxially glabrous or hirtellous along sides of costa; secondary veins 10 to 23 pairs, reticulating near margins or usually extending to unite with margins, with 1(to 3) well-developed intersecondary vein(s) usually present between pairs of secondary veins and often difficult to distinguish from these, adaxially and abaxially costa prominulous to prominent and secondary veins and strongly reticulated tertiary venation prominulous; margins thinly to distinctly cartilaginous, entire to usually ciliolate; *petioles* 3–7 mm long, glabrous to hirtellous; *stipules* glabrous to hirtellous, persistent, interpetiolar, 5–9 mm long, ovate to ligulate, bilobed for 1/3–1/2, lobes narrowly triangular to deltate, rounded to obtuse or acute, entire to ciliolate. *Inflorescences* terminal, erect, seemingly "tripartite" with bracts subtending the basalmost pair of axes well developed and foliaceous; branched portion pyramidal to narrowly pyramidal, 6–10 × 3–7 cm (excluding corollas), with 4 to 5 pairs of developed secondary axes, with flowers pedicellate in cymules of 3 to 7; bracts entire to ciliolate, those subtending secondary axes narrowly lanceolate to narrowly triangular, 4–10 mm long, acute, those subtending pedicels triangular, 1–2 mm long, acute, sometimes displaced by up to 1/3 of length of pedicel above its base; pedicels 1.5–7 mm long; peduncle, axes, bracts, and pedicels glabrous to pilosulous, yellow; *flowers* with hypanthium turbinate, ca. 2 mm long; calyx limb glabrous, 1.2–2 mm long, divided for 1/3–2/3, lobes triangular to ovate and overlapping on lateral margins, obtuse to rounded, entire to ciliolate; corolla tubular to tubular-funnelform, cream to usually yellow, a little swollen at base, generally straight there and in tube, externally glabrous, internally glabrous except for a pilose ring ca. 1.5 mm wide at ca. 1 mm above base, tube 7–8 mm long, ca. 2 mm diam. near middle, lobes triangular, ca. 2 mm long, acute, adaxially with a fleshy, conical to spatulate, reflexed projection 3–4 mm long, the projections together forming a star-like shield on top of the corolla in bud; anthers ca. 2.5 mm long, partially exserted; stigmas 2, ca. 2 mm long, included and positioned ca. 1/2 length of corolla tube above base. *Infructescences* similar to inflorescences, becoming red to red-purple; *fruit* obovoid, ca. 7 × 6 mm, somewhat flattened laterally, glabrous, bright blue; *pyrenes* 2, planoconvex, dorsally with 3 to 5 longitudinal planar angles.

Distribution, habitat, and phenology. In wet forests at 1800–2750 m of the Eastern Andean Cordillera of Colombia; collected in flower in February,

May, June, and October, in fruit in May, June, and December.

This new species is distinguished by its interpetiolar stipules, its leaves with the venation prominulous on both surfaces and the intersecondary veins well developed, its rather well-developed calyx limb, its corollas with unusually well developed appendages on the lobes, its obovate fruits, and its pyrenes dorsally with planar angles. The corolla lobe appendages are unusual in *Palicourea*, and the grouped appendages give the corollas in bud a starlike appearance; the specific epithet refers to this structure. Similarly well developed corolla lobe appendages are found on a few other species of *Palicourea*: *P. lehmannii* (Rusby) Standley differs from *P. stellata* by its stipules united around the stem into a well-developed sheath and its blue to purple corollas with tubes 24–30 mm long, and is known only from a small region near Cali in the Western Cordillera of the Andes; *P. cornigera* C. M. Taylor differs from *P. stellata* by its pilosulous pubescence on both vegetative and reproductive parts, its stipules that are united around the stem in well-developed sheaths, its calyx limbs 3.5–6 mm long, and its white to blue corollas with tubes 15–20 mm long, and is known only from Ecuador; *P. corniculata* C. M. Taylor differs from *P. stellata* by its stipules united around the stem into continuous sheaths, its subglobose hypanthia, its corollas with tubes 10–15 mm long and the lobe appendages 1.5–2.5 mm long, and its pyrenes with rather sharp dorsal ridges, and is also known only from Ecuador. *Palicourea stellata* is similar also to *P. sulphurea* (Ruiz & Pavón) DC., which is sympatric but differs by its corollas with unappendaged lobes. The leaves of *P. stellata* are rather unusual in that their abaxial and adaxial surfaces are similar in color, texture, prominence of the venation, and especially in having similar pubescence along the sides of the costa on both surfaces. The flowers seen of *P. stellata* are similar to the short-styled form of distylous *Palicourea* species in the arrangement of their anthers and stigmas.

Paratypes. COLOMBIA. **Boyacá:** mpio. El Encino, corregimiento de Virolín, Hacienda La Sierra, *Lozano 2264* (COL); mpio. Arcabuco, vereda Piedras Blancas, Finca La Delicias, *Rangel et al. 13175* (COL); mpio. de Gámbita, vereda El Taladro, *J. H. Torres R. 2634* (COL). **Santander:** mpio. de Charalá, vereda El Taladro, Km 50–55, carretera Duitama–Virolín, *S. Díaz P. 1613* (COL); mpio. de Charalá, vereda El Volcán, *L. D. Moreno & A. V. Méndez 73* (COL), *L. D. Moreno & A. V. Méndez 76* (COL); mpio. de Gámbita, vereda El Taladro, *J. H. Torres R. 2542* (COL); mpio. de Charalá, corregimiento de Virolín, sitio Cañaverales, *J. H. Torres R. 2647* (COL).

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